

Outcomes After Joint Arthroplasty and Ankle Arthrodesis in Patients with Haemophilia



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Haemophilic Arthropathy

- Initiated by recurrent bleeding and synovial thickening
- Vicious cycle often with ‘target’ joint
- Knees, ankles, elbows most common
- High burden of disease



Factor Prophylaxis and Arthropathy

- Significantly changed the nature and management of disease.
- However,
 - Less benefit unless applied at very young age
 - Administration issues in the young
 - Cost
 - Traumatic bleeds
 - Inhibitors



Joint Arthroplasty in Haemophilia

- Data predominantly in TKR
 - Improvements in pain but variable improvements in post operative function
 - ?Higher infection rates in HIV+ patients
 - Follow up <10 years in most studies
 - Limited data in patient oriented outcomes



Joint Arthroplasty in Haemophilia

- THR
 - Some pain relief and improvements in function
 - ?higher complication and revision rates
 - Recent reports more favourable
- Other joints
 - Elbow replacement
 - Shoulder replacement
 - Ankle arthrodesis



Aims

- To investigate outcomes of haemophilic joint replacements and ankle arthrodeses in an Australian setting
 - Long term outcomes
 - Complications
 - Post operative functional status
 - Patient oriented outcomes
 - Satisfaction with surgery
 - Quality of life
 - Comparison between different joints



Patients and Methods

- Patients with haemophilia A or B
- Joint replacement or ankle arthrodesis between 1985 and 2008



Patients and Methods

- Retrospective review of patient histories
- Assessment of outcomes (live patients)
 - Patient Questionnaires
 - Clinician Assessment



Follow up

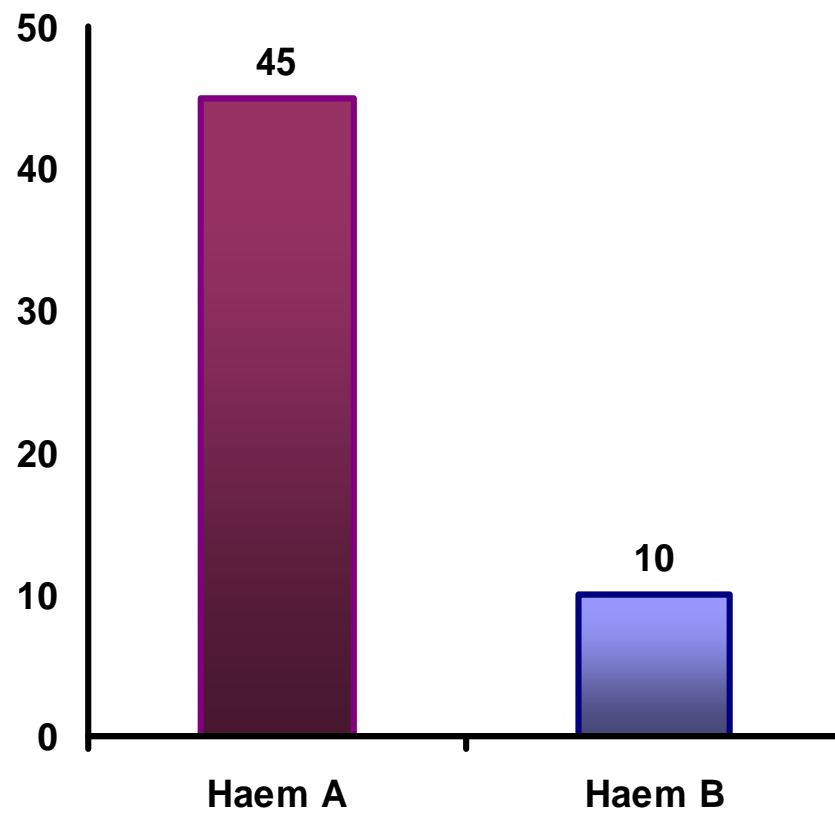
- Average follow up: 11.0 years (range: 1-22 years)
- Single institution
- Multiple surgeons (consultant/registrar)
- All elective
- 1 clinician assessor



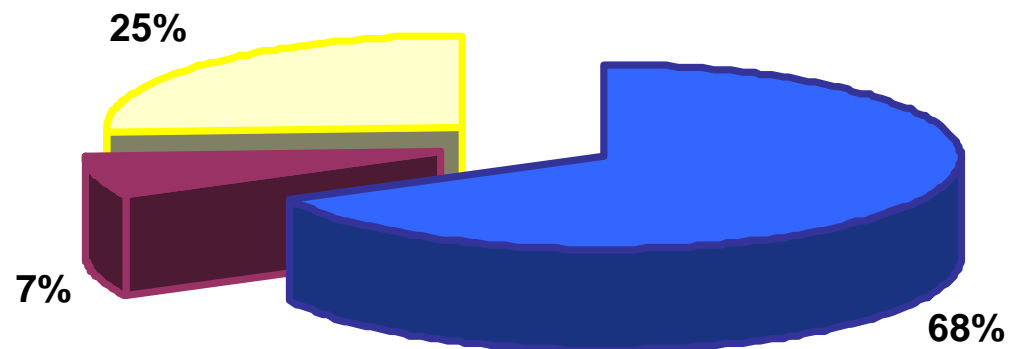
Results

- 55 patients
 - Total of 86 joint procedures
- 23 of 55 patients deceased as of July 2009
 - Still included for complication analysis
- 30 of 33 live patients interviewed and examined (follow up rate = 91%)

Haemophilia Type

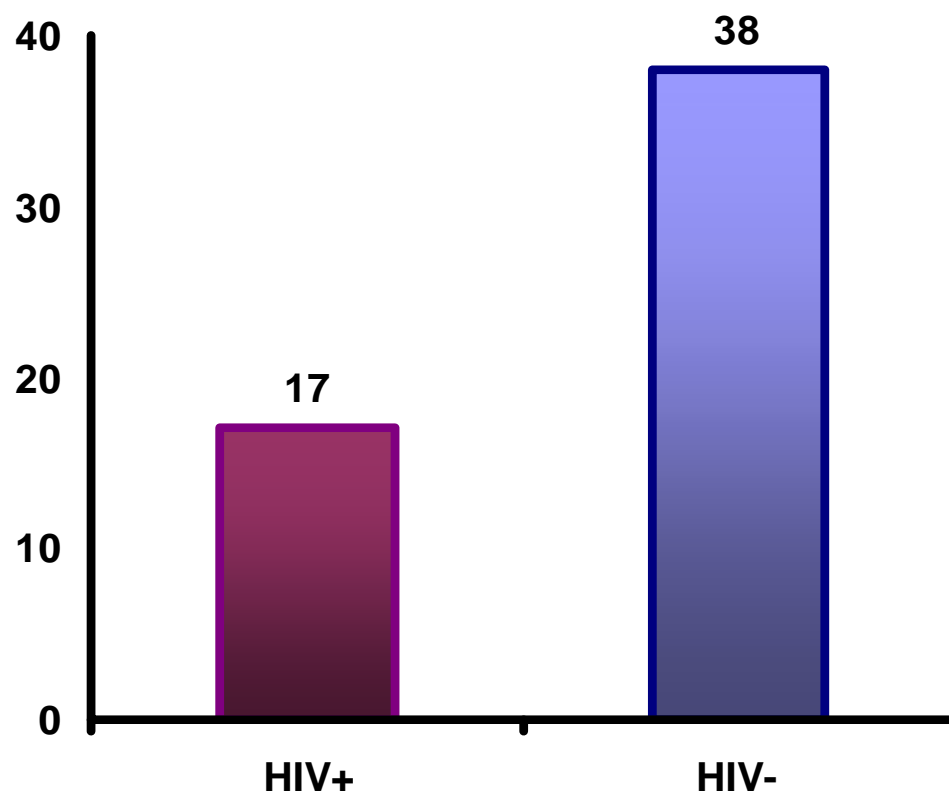


Haemophilia Severity

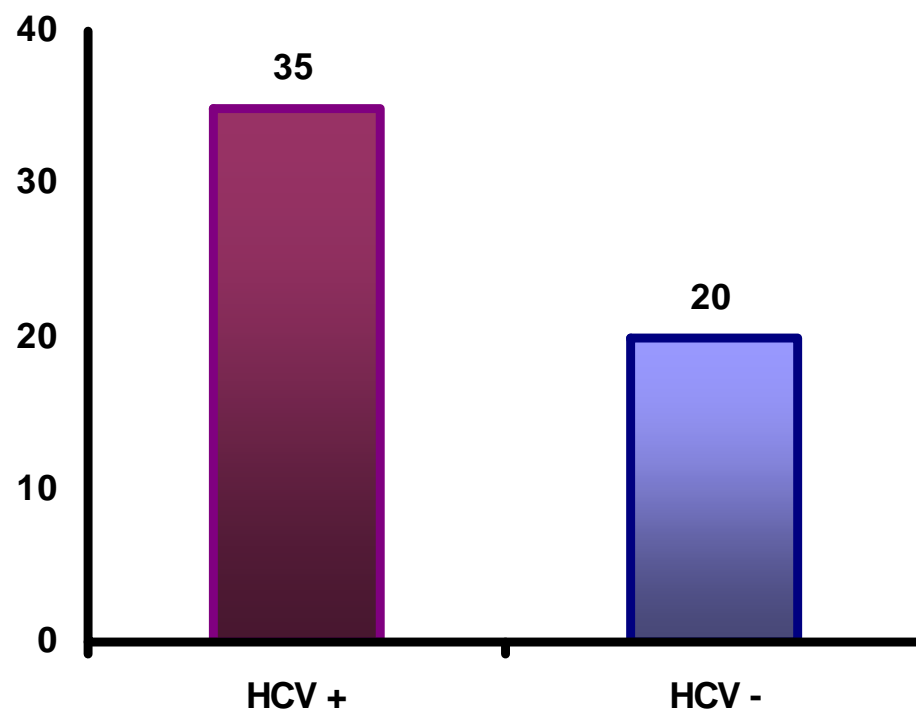


■ severe (<1%) ■ moderate (1-5%) ■ mild (>5%)

HIV status



HCV status at time of OR





Joints

- 41 knee replacements in 32 patients
- 18 hip replacements in 15 patients
- 6 elbow replacements in 3 patients
- 21 ankle arthrodeses in 13 patients
 - 17 tibiotalar
 - 4 subtalar

- Total – 86 procedures in 55 patients

Complications - Knees

Complications (of total 41 TKRs)	Numbers
Culture proven deep infection	6
Failure to regain motion (offered MUA)	7
Large post op bleed requiring evacuation of clot	4
Aseptic loosening requiring revision	2
Intraoperative posteromedial corner #	1
Post operative periprosthetic # secondary to minimal trauma	1
Total Complications	21



Complications – Knees – Infections

- 6 culture proven deep infections
 - MSSA x4, MRSA x1, Group G strep x1
 - Average time between arthroplasty and identification of infection
 - 3.6 years (range 56 days to 11.2 years)
- Outcomes
 - Above knee amputation 2
 - Removal, cement spacer, then redo 1
 - Removal and eventual fusion 2
 - Resolved with washout and IV abx 1

Complications – Knees – Infections

	Current Study	Other Reports
General population infection rate	-	1-2%
Haemophilia population infection rate	14.6% (6/41)	5-18%
HIV+ infection rate	20% (2/10)	10-29%
HIV- infection rate	10.3% (4/39)	0-13%

Silva, Luck, et al 2005, *JBJS*, Beeton et al 2000, *Haemophilia*

Survival rates - Knees

- Survival rates at 10 years
 - Survival free of component removal = 83%
 - Survival free of infection = 88%
 - Survival free of mechanical failures = 95%



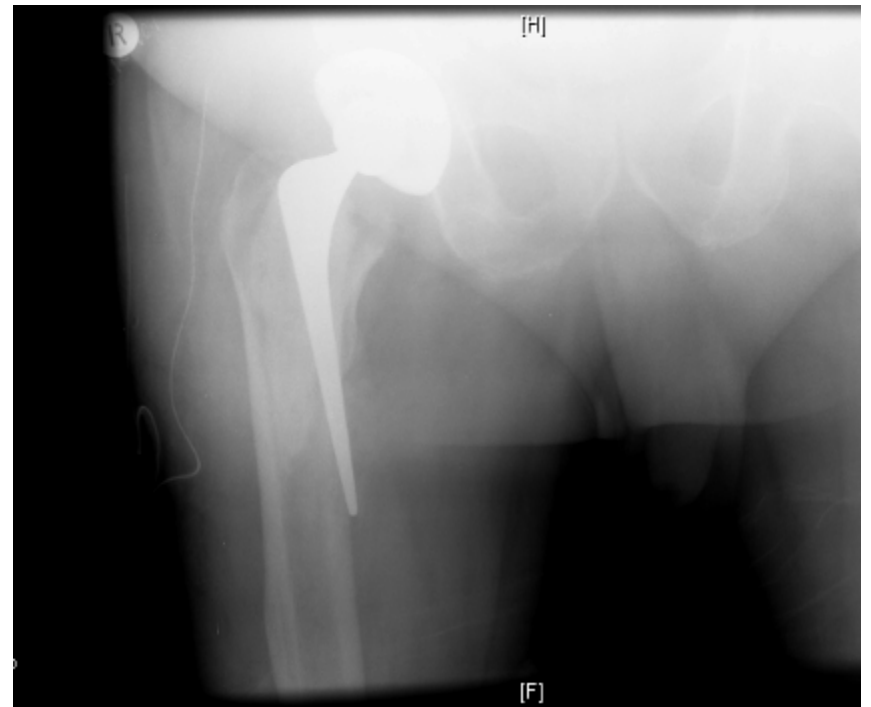
Complications - Hips

Complications (of total 18 THRs)	numbers
Intraoperative periprosthetic # picked up on post op XR	1
Transient sciatic nerve palsy resolved by 3/12	1
Periprosthetic # secondary to post operative trauma (required ORIF)	2

9 cemented, 9 uncemented THRs

Complications - Hips

- Only 3 out of 18 cases requiring reoperation
- No infections, no aseptic loosening
- However, shorter follow up than TKRs (mean = 5.5 vs 12.8 years)





Complications - Elbows

- 6 elbow replacements in 3 patients
 - 1 case of triceps avulsion diagnosed at 3 years
 - repaired with good function
 - 1 case of humeral component aseptic loosening at 5 years
 - revision then intraoperative periprosthetic # humeral epicondyle. ORIF. Now stiff.

Complications - Ankles

Complications (of total 21 ankles)	numbers
Stenosing synovitis of FHL requiring removal of screw	1
Equinus malunion requiring revision	1
Fibulotalar impingement requiring revision	1
Deep infection and subsequent Achilles rupture requiring repair	1
Delayed union (>12month)	1
Stress # in other foot secondary to POP and NWB	1
Irritating screws requiring removal	2
Distal tibia # just proximal to fusion requiring revision	1



Complications - Ankles

- In all, 9 of 21 (43%) ankles had significant complications
 - 7 of 21 (33%) requiring revision or reoperation
 - All complications in tibiotalar fusions

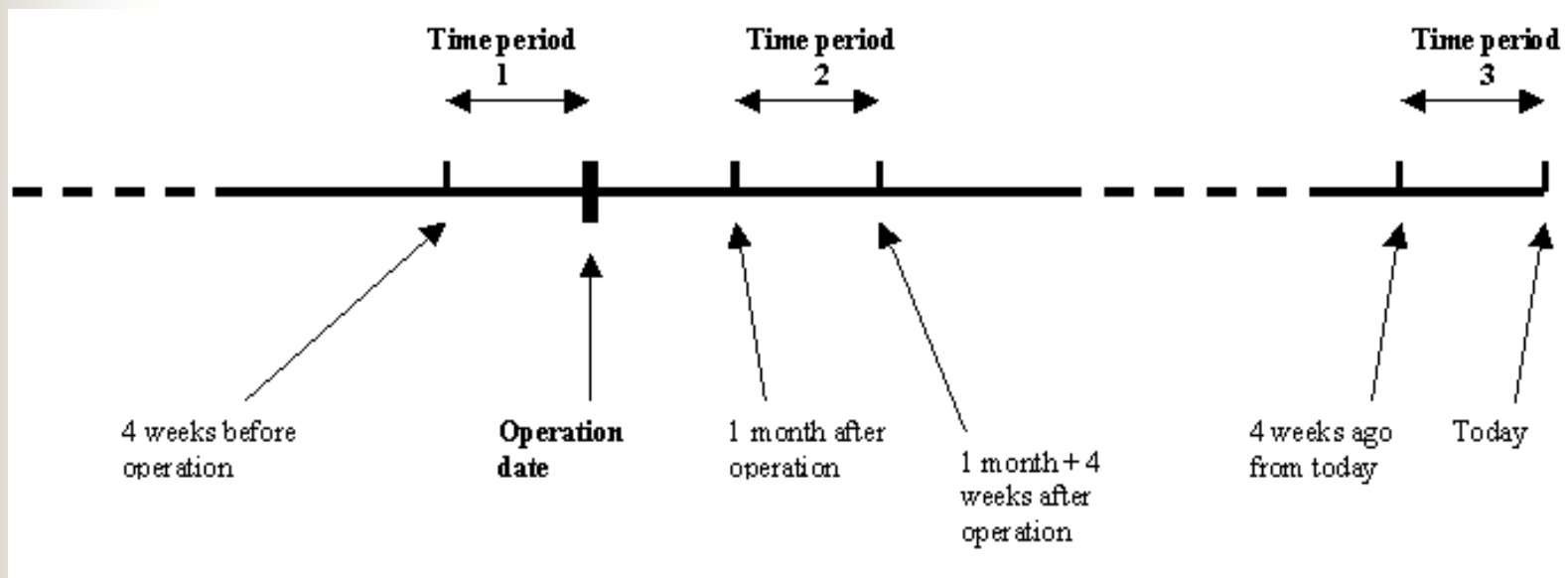


Complications – All Joints

	numbers
Total procedures	86
Total significant complications	43
Total number of re-operations	48
Total number of re-admissions for complications	40

Pain relief

- Patients were asked to retrospectively rate pain in 3 periods
 - 1) worst pain in the 4 weeks leading up to their joint operation
 - 2) worst pain in the 4 week period one month after the operation
 - 3) worst pain in the last 4 weeks



Pain Scores (Mean)

	TKR	THR	Ankle fusion
Period 1	7.0	8.5	8.7
Period 2	4.3	2.4	5.0
Period 3	0.6	0.9	3.0

Post Operative Joint Scores - Knee

Parameters	Current study (mean)	Other Reported (range)	Guidelines
Flexion arc (incl. 2x fusions)	60.3°	75° - 92.2 °	-
Fixed flexion contractures	5.8°	5.6° - 10°	-
Oxford Knee Score	36.5	-	>40: Excellent
Knee Society Score – Knee Score	79.7	75.7 - 82.8	>80: Excellent
Knee Society Score – Functional Score	57.1	75.8 – 96.2	>80: Excellent

Dae et al 2005 *J. of Arthroplasty*, Lachiewicz et al, 1985 *JBJS*, Rodriguez-Merchan et al, 2006, *JBJS*, Beeton et al, 2000, *Haemophilia*. Silva et al 2005, *JBJS*. Schick et al 1999, *Clinical Rheumatology*

Post Operative Joint Scores - Hip

	Current Study	Other Reported	Guidelines
Oxford Hip Score	38.1	-	>40: Excellent
Harris Hip Score	69.5	85 - 95.9	>90: Excellent

Heeg et al 1998 *Haemophilia*, Yoo et al 2009, *Haemophilia*, Habermann et al 2007, *International Orthopaedics*

Post Operative Joint Scores - Ankle

	Current Study	Guidelines
American Foot and Ankle Score (n=11)	61.1 ± 9.5	>90: Excellent

Post Operative Joint Scores - Elbow

	Current Study	Guidelines
Quick-DASH (n=6)	30.3 ± 23.0	>90: very poor <10: Excellent

- 5 of the 6 elbows scored between 13 and 23
- One elbow scored 89 due to recent bleed

Functional Independence Score in Haemophilia

	Current Study
FISH	20.3 ± 3.1

Quality of Life

-SF12 based on index joint

	Physical Score	Mental Score
all (n=31)	34.0 (30.1-38.0)	54.0 (50.3-57.6)
knee (n=16)	36.9 (31.9-41.8)	53.5 (48.8-58.1)
hip (n=9)	31.6 (23.6-39.6)	54.6 (45.9-63.3)
ankle (n=6)	30.2 (20.6-39.8)	54.3 (46.1-62.5)
Age matched general population	47	51
Post TKR non haemophilia	55.1	51.7

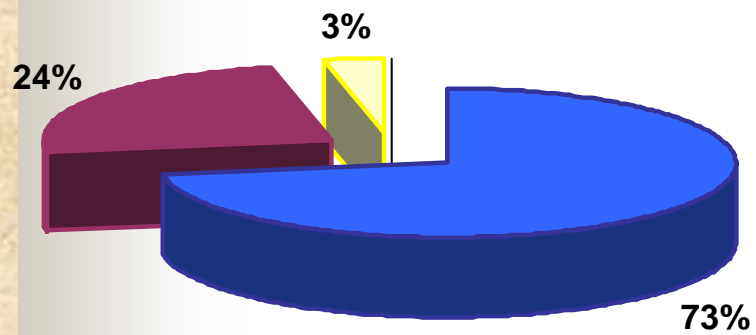
Patient Satisfaction

	Mean satisfaction score
Knee	1.75
Hip	1.33
Ankle	2.0

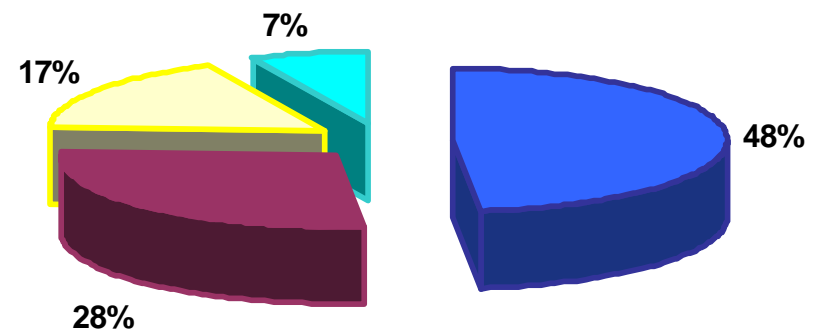
1 = very satisfied, 2 = mostly satisfied,
3 = somewhat satisfied, 4 = dissatisfied

Patient Satisfaction

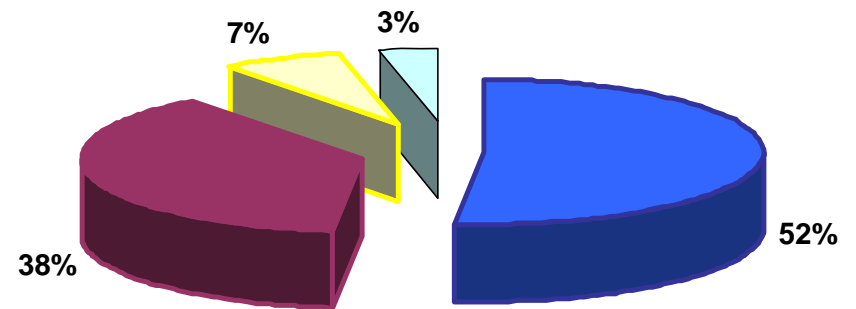
satisfaction with pain relief







satisfaction with function

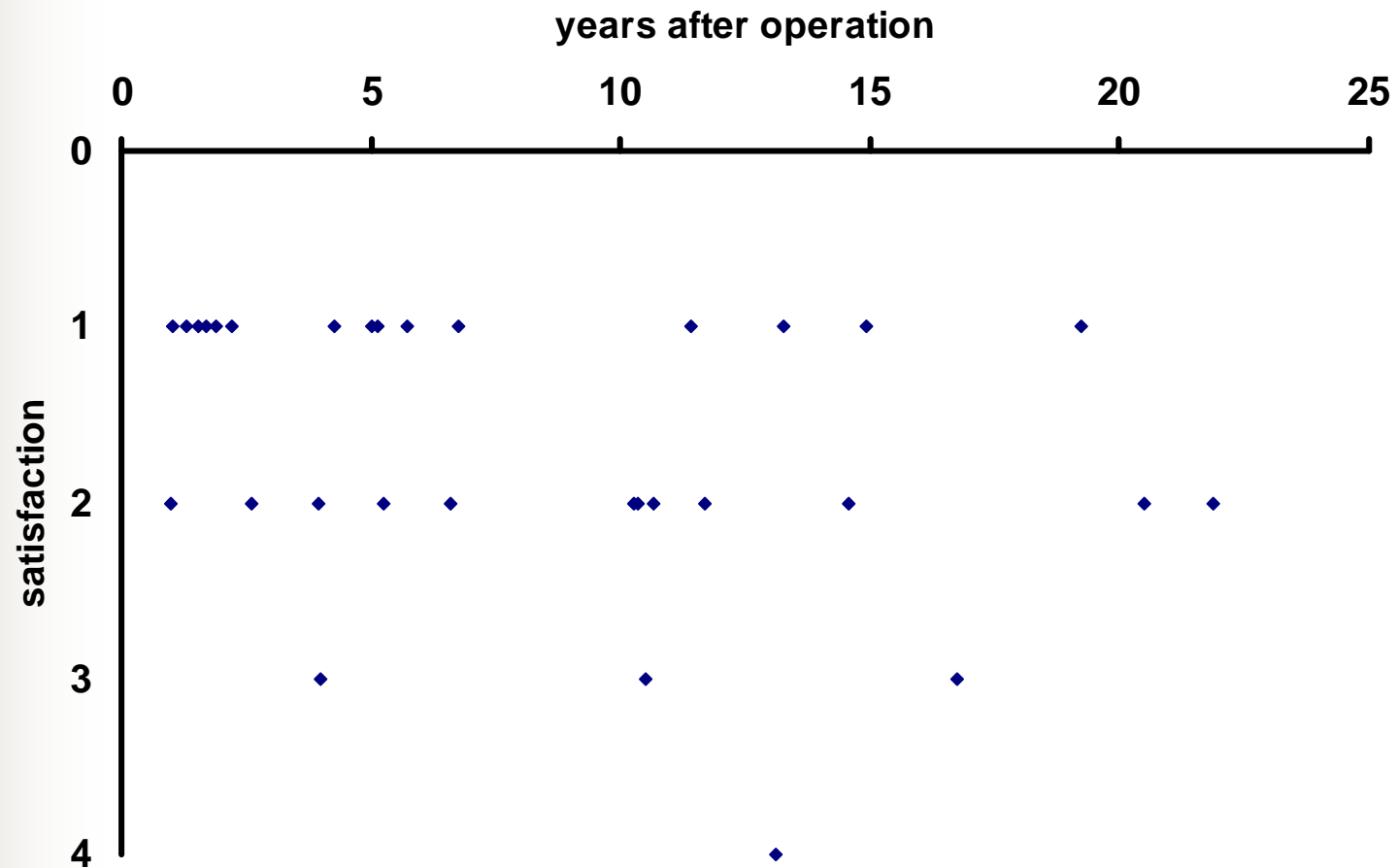


Overall satisfaction with operation



-  very satisfied
-  mostly satisfied
-  Somewhat satisfied
-  dissatisfied

Patient Satisfaction



Correlation coefficient $r = 0.31, p > 0.05$

Y axis: 1= very satisfied, 2= mostly satisfied, 3= somewhat satisfied, 4= dissatisfied



Summary

- Higher rates of complications
 - Higher infection rate and reoperation rate
- Acceptable prosthesis survival rate
- High reoperation rate following ankle arthrodesis (43%)
- Excellent relief of pain
 - TKR > THR > Ankle arthrodesis
- Moderate functional outcomes
- Overall patient satisfaction is high despite complications



Many thanks to...

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